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Shany et al. (43) **Pub. Date: Feb. 12, 2004**(54) **PRACTICAL CODING AND METRIC  
CALCULATION FOR THE LATTICE  
INTERFERED CHANNEL****Publication Classification**(51) **Int. Cl.<sup>7</sup>** ..... **H03M 13/00**(52) **U.S. Cl.** ..... **714/752**(75) **Inventors:** Yaron Shany, Kfar Saba (IL); David  
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Hadera (IL)**Correspondence Address:****SCHWEGMAN, LUNDBERG, WOESSNER &  
KLUTH, P.A.****P.O. BOX 2938****MINNEAPOLIS, MN 55402 (US)**(73) **Assignee:** **D.S.P.C. TECHNOLOGIES LTD.**(21) **Appl. No.:** **10/214,630**(22) **Filed:** **Aug. 7, 2002**(57) **ABSTRACT**

A communication system includes a lattice interfered channel to transmit data from a transmitter to a receiver. In one embodiment, an encoding-modulation scheme having a rich signal constellation is used to encode data at a total rate of 0.7 bit/dimension or less before transmission into the lattice interfered channel. In another embodiment, decoding metric approximation techniques are used to process signals received from the lattice interfered channel. In still another embodiment, multilevel code (MLC) decoding is used to jointly decode an error correction code component and a lattice/MLC component of a received signal. The error correction code component may then be extracted from the decoded signal.

